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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/660,151	09/11/2003	Songlin Xu	004994	4946
			ALRT/ETCH/SILICON	
			EXAMINER	
			GHYKA, ALEXANDER G	
			ART UNIT	PAPER NUMBER
			2812	
DATE MAILED: 07/19/2005				

44182 7590 07/19/2005  
MOSER, PATTERSON & SHERIDAN, LLP  
APPLIED MATERIALS INC  
595 SHREWSBURY AVE  
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SHREWSBURY, NJ 07702

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/660,151

Applicant(s)

XU ET AL.

Examiner

Alexander G. Ghyska

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 06 May 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-18 and 21-25 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-18 and 21-25 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

ALEXANDER GHYKA  
PRIMARY EXAMINER

Av 2812  
*Alex Ghyska*

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

Applicants' response of May 6, 2005 has been considered and entered in the record. Claims 19-20 are cancelled. New Claims 21-25 are added. Claims 1-18 and 21-25 are now under consideration. Applicants' arguments have been considered but are not persuasive for the reasons as discussed below.

#### ***Claim Rejections - 35 USC § 103***

**Claims 1-18 and 21-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nallan et al (US 6,322,714) for the reasons of record.**

#### ***Response to Applicants' Arguments***

Applicants' argue that Nallan et al do not disclose a method for etching a polysilicon layer using a hard mask and points to various portions of the reference where a resist mask is used. The Examiner maintains that Nallan et al is not limited to its Examples which disclose a resist mask, and also discloses a silicon oxide or hard mask. See column 6, lines 55-60, column 1, lines 18-21 and column 1, lines 45-50. The Examiner maintains that the Nallan reference discloses both resist masks and hard masks.

The Applicants further argue that as Nallan teaches a chemistry for etching a film stack different than what is claimed, a discovery of the claimed ratio of volumetric flow rates for the gas mixture of the claims could not be deduced from the teachings of Nallan as a matter of routine experimentation. The Examiner maintains that as Nallan

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discloses the use of a hard mask, the discovery of the various flow rates would involve routine experimentation by one of ordinary skill in the art, as discussed in the previous Office action.

Applicants further argue that Nallan does not teach or suggest a gas mixture used for etching that includes nitrogen gas. The Examiner maintains that Nallan discloses the use of nitrogen to remove any remaining inorganic fluorinated gas. See column 10, lines 65-68. The Examiner maintains that it would have been obvious for one of ordinary skill in the art to have flowed nitrogen gas in the invention since Nallan et al teaches nitrogen fluoride, and nitrogen gas is known for its inert implanting qualities in etching. Nitrogen fluoride is an unstable gas as disclosed by Nallan, column 10, lines 48-60, and the use of nitrogen as a carrier would have been obvious to one of ordinary skill in the art. Moreover nitrogen fluoride disintegrates into nitrogen. See column 6, line 65 to column 7, line 3. Furthermore, the Examiner notes that nitrogen can have a flowrate of zero. See present Claim 3. Therefore, the use of nitrogen gas would have been obvious.

With respect to Applicants' arguments of using more than one gas mixture, the Examiner maintains that in general the transposition of process steps or the splitting of one step into two, where the processes are substantially identical or equivalent in terms of function, manner and result, was held to not patentably distinguish the processes. See *Ex Parte Rubin*, 128 USPQ 159 (1959). In view of the foregoing, the rejections are maintained, and new Claims 21-25 are rejected for the reasons of record.

***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alexander G. Ghyka whose telephone number is (571) 272-1669. The examiner can normally be reached on Monday through Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Lebentritt can be reached on (571) 272-1873. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

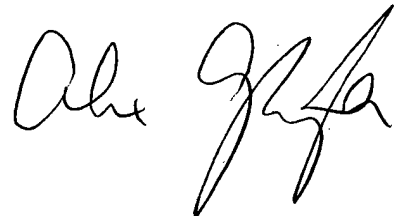
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AGG

July 18, 2005

ALEXANDER GHYKA  
PRIMARY EXAMINER

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A handwritten signature in black ink, appearing to read 'Alex Ghyska', written in a cursive style.